Agriculture Canada

MODIFIED ATMOSPHERE PACKAGING

The Consumer Perspective

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MODIFIED ATMOSPHERE PACKAGING

THE CONSUMER PERSPECTIVE

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REPORT SERIES

MODIFIED ATMOSPHERE PACKAGING

A. An Extended Shelf Life Packaging Technology

B. Investment Decisions

C. The Consumer Perspective

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INTRODUCTION

Modified Atmosphere Packaging (MAP) could satisfy consumer demands for fresh, high-quality products that have a longer shelf life. The demand for MAP items in the United States could reach a total of 11 billion by 1993. A current leader in this technology is the United Kingdom, followed by France and West Germany. At present, Canada uses MAP primarily in the food distribution system.

MAP alters the composition of the natural atmosphere inside a package by surrounding the food product with a specific combination of three gases normally found in the atmosphere we breathe - oxygen, carbon dioxide and nitrogen. As a result, the product's shelf life is extended, without the use of chemical or physical treatments such as preservatives, freezing or drying. MAP can be used to package a variety of products, such as fresh produce, meat, poultry, fish, baked goods, entrées and snack foods.

Agriculture Canada, in cooperation with the Federal/Provincial Market Development Council, commissioned a study on MAP's potential in the Canadian marketplace. The study examined current applications, interviewed consumers to ascertain their attitudes toward MAP technology and investigated the economic benefits of the technology for potential investors. As part of the report series available on this study, this publication presents the findings from the consumer-marketing research, which was conducted by the Angus Reid Group.

METHODOLOGY

Qualitative phase

Industry and government representatives participated in two brainstorming sessions to identify potential markets for MAP products and to generate ideas and approaches for the study. Following these sessions, 20 in-depth personal interviews were held in Toronto with primary grocery shoppers (male and female) of different ages and socio-economic status. Interviews were chosen over group discussions so that individuals would not be influenced by the attitudes of other participants. Although the interviews followed an outline, they were relatively unstructured in order to allow unexpected but relevant issues to be explored. The interviews, which lasted approximately one hour, were conducted in December 1988.

One of the most important reasons for this phase was to prepare for the quantitative questionnaire - to determine the most relevant questions and the most appropriate ways of explaining MAP to consumers. (The questionnaire is attached as Appendix 1).

Quantitative phase

A total of 661 in-home personal interviews were conducted in 6 major Canadian cities - Vancouver, Calgary, Edmonton, Toronto, Montreal (all French-speaking) and Halifax. The researchers chose these cities because each represents a major market in which, it was assumed, MAP must succeed if it was to succeed at all. Each interview, lasting approximately 40 minutes, was conducted with the household's main grocery shopper (18 years of age or older). A survey sample of this size is considered accurate within a margin of 4 percentage points, 95 times out of 100.

MAIN FINDINGS

Current purchase patterns, shelf life expectancy and usage

Respondents were asked a series of questions about their current shopping habits for 29 food items within 5 categories: vegetables, fruit, baked goods, meat and poultry, and prepared foods. The objective was to determine which products were promising candidates for MAP by virtue of their current frequency of purchase and the amount discarded because of freshness loss. The overall findings are presented below (See Appendix 2 for a more detailed description by region).

The most frequently purchased of the four vegetables listed in the survey was lettuce (both in and out of season), followed by broccoli, cauliflower and mushrooms (all in season). The respondents bought vegetables at the supermarket more often than at fruit and vegetables stores. Overall, they expected lettuce to last longer than any of the other vegetables (an average of 6.5 days). Product waste was high but varied. Sixty-three percent of the consumers said they wasted some lettuce, while 33% to 38% mentioned waste of the other vegetables (Table 1).

Of the five fruits examined in this study, strawberries in season were the most frequently purchased. Peaches and pears were next in line, whereas blueberries and raspberries tended to be purchased infrequently (about half the respondents indicated they did not buy them at all). Fruits were usually bought at the grocery store, both in and out of season, although roadside stands and farmers' markets were quite popular for fruits in season. No fruit was expected to last longer than one week in the refrigerator. For all types of fruits, 19% to 25% of consumers indicated some waste (Table 2).

The respondents did not make frequent purchases of the three bakery products in the study. They expected these items to keep well for a week. Between 16% and 21% reported wasting some baked goods (Table 3).

The most frequently purchased product of the five meat and poultry items studied was ground beef, followed by chicken parts. Pork chops ranked third, followed by deli-style and packaged sliced meats. Most consumers bought meat and poultry from the supermarket. They expected ground beef, chicken parts and pork chops to last an average of 2 to 7 days. Virtually no waste was reported for these items. However, approximately one-third of respondents reported wasting some deli or packaged meat slices (Table 4).

Table 1 Current purchase patterns (%) - vegetables[1]

	Total	Vancouver	Calgary/ Edmonton	Toronto	Montreal	Halifax
NO. OF RESPONDENTS	661	131	132	133	132	133
LETTUCE						
More than once a week	16	24	13	14	14	17
About once a week	51	46	37	63	65	41
Once every 2 weeks	18	16	27	11	13	25
Once a month	6	5	8	5	4	8
Less often	4	4	7	3	2	5
Not at all	5	4	8	5	2	5
Don't know	-	1	-	-	-	-
BROCCOLI						
More than once a week	5	8	2	4	7	5
About once a week	27	31	17	38	30	20
Once every 2 weeks	25	29	23	21	20	32
Once a month	16	14	24	14	14	15
Less often	9	8	15	8	11	5
Not at all	17	11	18	16	18	23
CAULIFLOWER						
More than once a week	3	5	2	2	5	3
About once a week	20	22	12	30	21	12
Once every 2 weeks	23	25	26	22	23	20
Once a month	19	20	25	19	13	17
Less often	16	21	18	10	12	18
Not at all	19	7	17	17	26	30
MUSHROOMS						
More than once a week	5	8	5	5	4	4
About once a week	25	23	14	23	39	24
Once every 2 weeks	19	21	19	13	14	28
Once a month	15	15	20	17	11	14
Less often	13	19	17	8	11	11
Not at all	23	14	25	35	20	20

[1] in season

Table 2 Current purchase patterns (%) - fruit[1]

	Total	Vancouver	Calgary/ Edmonton	Toronto	Montreal	Halifax
NO. OF RESPONDENTS	661	131	132	133	132	133
STRAWBERRIES						
More than once a week	15	17	7	19	11	24
About once a week	32	25	27	40	43	26
Once every 2 weeks	16	19	12	15	20	11
Once a month	10	11	14	11	5	8
Less often	12	16	20	5	6	13
Not at all	15	11	20	11	14	18
Don't know	-	1	-	-	1	-
PEACHES						
More than once a week	7	12	7	9	6	3
About once a week	35	32	27	46	42	29
Once every 2 weeks	20	18	19	16	22	28
Once a month	14	15	20	11	8	17
Less often	8	14	11	5	7	5
Not at all	15	9	17	13	16	19
PEARS						
More than once a week	5	7	3	5	2	7
About once a week	30	27	20	40	43	19
Once every 2 weeks	21	13	17	23	23	26
Once a month	13	12	23	6	9	15
Less often	11	9	19	5	11	12
Not at all	21	31	18	22	11	21
Don't know	-	-	-	-	-	1
BLUEBERRIES						
More than once a week	5	5	3	1	4	12
About once a week	13	13	6	8	25	11
Once every 2 weeks	9	12	3	5	16	8
Once a month	11	17	10	14	7	8
Less often	16	19	19	9	13	22
Not at all	46	34	59	64	35	39
RASPBERRIES						
More than once a week	4	7	2	1	4	5
About once a week	11	11	4	8	23	7
Once every 2 weeks	7	9	3	7	12	5
Once a month	9	11	7	16	8	3
Less often	14	19	18	7	11	13
Not at all	55	42	66	61	40	68

[1] in season

Table 3 Current purchase patterns (%) - baked goods

	Total	Vancouver	Calgary/ Edmonton	Toronto	Montreal	Halifax
NO. OF RESPONDENTS	661	131	132	133	132	133
ENGLISH MUFFINS						
More than once a week	1	2	1	1	-	1
About once a week	10	8	21	7	8	14
Once every 2 weeks	9	8	5	12	2	20
Once a month	14	18	9	18	7	18
Less often	17	23	20	19	5	17
Not at all	50	41	64	34	79	31
REGULAR MUFFINS						
More than once a week	1	-	2	2	-	1
About once a week	8	8	4	18	7	5
Once every 2 weeks	7	8	2	10	9	5
Once a month	11	14	9	13	14	5
Less often	12	19	19	11	4	8
Not at all	61	52	64	47	66	77
BAGELS						
More than once a week	1	2	1	2	-	2
About once a week	4	4	2	12	3	2
Once every 2 weeks	4	5	2	8	2	6
Once a month	7	5	4	16	3	5
Less often	11	18	13	10	5	9
Not at all	73	67	80	53	87	77

Table 4 Current purchase patterns (%) - meat poultry

	Total	Vancouver	Calgary/ Edmonton	Toronto	Montreal	Halifax
NO. OF RESPONDENTS	661	131	132	133	132	133
GROUND BEEF						
More than once a week	5	4	3	11	5	2
About once a week	46	34	53	48	69	44
Once every 2 weeks	25	31	34	20	11	31
Once a month	12	17	17	5	8	13
Less often	7	11	6	5	5	6
Not at all	5	5	3	12	2	5
CHICKEN PARTS						
More than once a week	3	1	3	5	2	4
About once a week	35	34	20	53	28	39
Once every 2 weeks	29	27	27	23	32	35
Once a month	14	21	15	5	14	17
Less often	8	8	14	5	11	5
Not at all	10	10	20	6	13	2
PORK CHOPS						
More than once a week	2	2	3	2	2	2
About once a week	26	22	20	36	19	32
Once every 2 weeks	23	19	24	18	25	27
Once a month	18	23	18	13	21	14
Less often	14	15	18	8	18	13
Not at all	17	20	16	23	15	13
Don't know	-	-	-	1	-	-
DELI-STYLE SLICED MEATS						
More than once a week	2	2	3	2	2	2
About once a week	31	36	17	35	40	27
Once every 2 weeks	16	14	15	23	14	14
Once a month	10	13	13	6	5	15
Less often	13	14	23	6	8	17
Not at all	27	21	30	29	30	25
PACKAGED SLICED MEATS						
More than once a week	3	4	5	2	2	2
About once a week	25	21	27	28	27	21
Once every 2 weeks	13	11	21	11	7	15
Once a month	10	11	17	11	5	5
Less often	11	14	10	10	7	14
Not at all	39	39	21	39	54	44

The respondents did not make significantly frequent purchases of the three items in the prepared foods category (gourmet entrées, regular entrées and prepackaged sandwiches). In fact, the majority did not purchase these products at all. When they did, they shopped at a supermarket.

Attitudes toward MAP

The first step in ascertaining consumer attitudes toward MAP was to explain the technology to the survey respondents. In order to determine whether the amount of information provided would influence attitudes, respondents were given either a long written description or a short verbal description of one of the five food categories. A specific product example was always cited.

It should be noted that the opinions of the respondents were based on their reactions to these descriptions, most often without the benefit of product usage experience.

Initial reactions

Immediately after being introduced to MAP through a verbal or written description, respondents were asked what their first thoughts or feelings were about the technology. This type of open-ended question encourages respondents to express their initial reaction and interpretation in their own words.

About 60% of the respondents had at least one positive comment, mainly that they thought MAP was a "good idea." However, over half also had some negative reactions to MAP: they were not interested or they had reservations about this type of packaging. Almost 20% expressed neutral comments, mainly that they would try it first and see what it was like (Figures 1 and 2).

Attitude statements

Consumers were asked to agree or disagree with 24 attitude statements about MAP (its potential advantages and disadvantages and the process itself). The objective was to determine consumers' underlying attitudes toward food freshness, quality, handling, shelf life, and packaging.

For each attitude statement, respondents were asked to indicate their level of agreement or disagreement, i.e. strong or moderate.

Figure 1

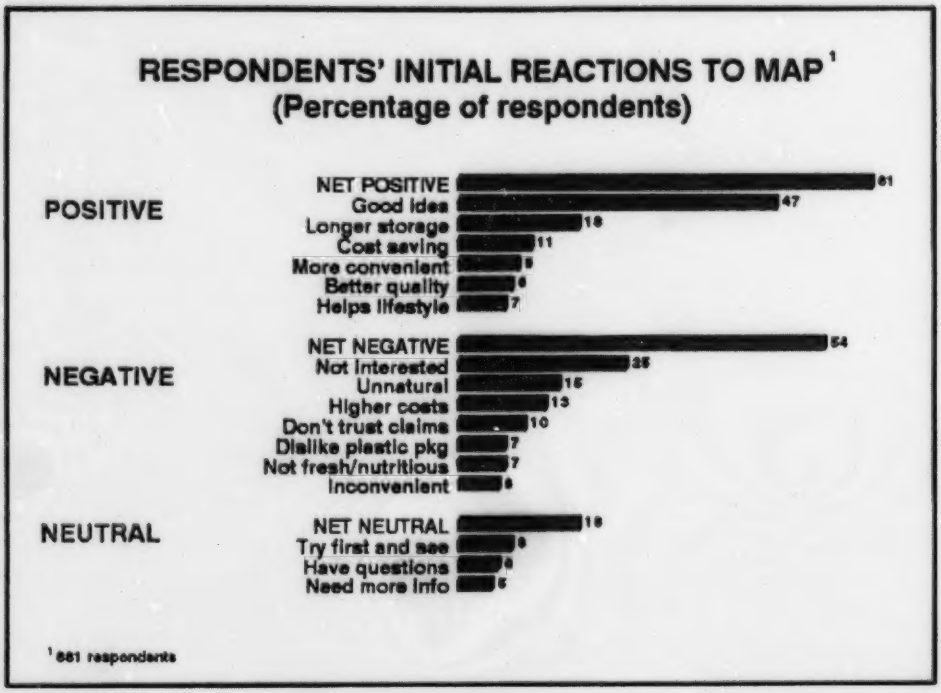
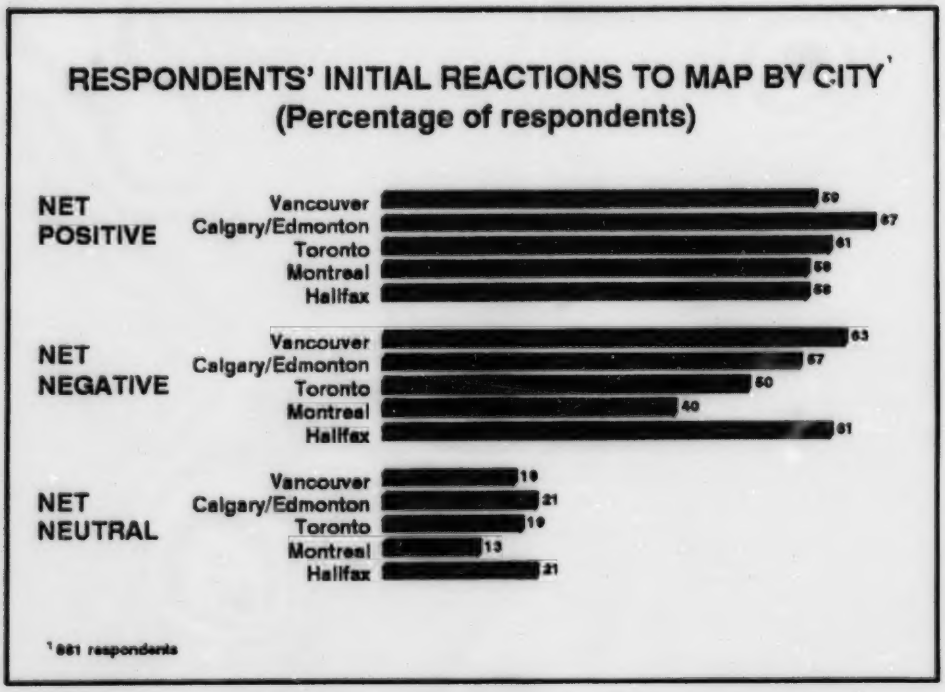


Figure 2



Only 2 of the 24 attitude statements elicited strong agreement from the majority of consumers: "More information about the process should be made public" and "Gases used should be clearly identified." A breakdown by city is given in Table 5.

From the main differences in attitudes among respondents, it was possible to distinguish three categories or market segments. These segments differed not only in their attitudes toward MAP technology, but also in their shopping habits and attitudes toward technological progress in general. These segments have been assigned names that reflect their overall characteristics:

- *convinced budgeters;*
- *leaners; and*
- *concerned traditionalists.*

Convinced budgeters

"Convinced budgeters," who represented 36% of the sample, are so named because of their generally high level of agreement on the benefits and advantages of MAP and their tendency to be fairly cost-conscious about their food budget. This group liked the idea of extending the shelf life of fresh food and believed that packaged fresh food was cleaner than unpackaged. They also thought that MAP foods would save them money by reducing food waste and that MAP represented a significant improvement over current packaging techniques. The convenience of MAP appealed to these consumers as they already bought a lot of "convenience foods." At the same time, they were enthusiastic about the prospect of including more fresh food in their diet.

On the other hand, they were not worried about higher food costs, "harmful gases" (for themselves or the environment) or lack of sufficient information on and government support of MAP technology. Compared to the consumers in the other two groups, convinced budgeters tended to be young (47% were between the ages of 18 and 34), less formally educated (only 8% had completed college or university), and residents of lower-income households (almost half had a household income of $30 000 or less). Typically, there were three people in the household. Convinced budgeters tended to reside in Toronto and Montreal.

Table 5 Agreement with attitude statements (percentage of respondents)

	Total	Van.	Cal./ Edm.	Mtl.	Tor.	Hal.
NO. OF RESPONDENTS	661	131	132	133	132	133
AGREE STRONGLY						
More information about process should be made public	74	87	84	73	55	69
Gases used should be clearly identified	71	85	86	69	49	66
Don't like fresh food for 2 weeks before use	40	51	50	32	25	43
Like idea of keeping fresh food for 2 weeks before use	38	34	40	46	45	23
Appealing - less handling of products by shoppers	38	34	48	38	40	29
Don't have problems with quality/shelf life	36	52	36	30	25	35
Result in unacceptably higher food costs	28	28	30	22	31	29
Don't want products packaged to extend shelf life	28	29	35	23	30	23
Packaged fresh food is cleaner	28	20	30	36	36	17
Need less packaging	26	32	33	29	8	27
Significant improvement over current techniques	25	22	20	31	36	18
Gov't wouldn't allow packaging if harmful	25	17	23	41	30	12
Gases used may be harmful	22	27	29	18	12	24
Too new to be used widely by public	22	21	21	23	21	23
Packaging which extends shelf life appeals to me	21	14	25	27	32	10
Save money by reducing food waste	20	16	21	29	18	14
May be more harmful to environment	19	21	26	23	9	19
Like having food prepared for me	18	21	17	24	17	12
If used in Europe should be safe to use here	17	20	13	24	20	6
Will allow me to have more fresh foods	16	15	20	25	13	9
Not concerned that a special atmosphere is used	11	13	14	12	14	5
Like it because I buy a lot of convenience food	10	4	10	12	15	8
Not very different	5	5	5	5	5	5
No difference between fresh and new packaged food	4	5	5	3	6	1

Leaners

Representing about 34% of the sample, "leaners" took a "middle-of-the-road" position on MAP. However, they had a tendency to lean toward the positive rather than the negative aspects of MAP. They generally did not believe this packaging process to be particularly different from current packaging, nor did they believe it represented any significant improvement. While they voiced some concern over the use of a special atmosphere to extend the shelf life of fresh products, they were not worried about the gases being harmful.

Consumers in this group tended to be between the ages of 25 and 44 (62%) and fairly well educated (1 in 4 had attended university or college). Their household income tended to be in the lower-middle bracket, and their household size was likely to be three or more people. They were also the market segment most likely to have three household members under the age of 16 and were more likely to be found in Halifax than in any of the other cities.

Concerned traditionalists

The remaining 30% of consumers were named "concerned traditionalists" because of their deep concern about the basic elements of MAP technology (extending shelf life through the use of gases) and its possible harmful effects on the environment and themselves. Essentially very negative toward the idea of MAP, this group wanted to see more information about the process. They also believed that fewer, rather than more, types of packaging were needed, that current methods of packaging were satisfactory and that the MAP process would result in unacceptably higher food costs.

Compared to the other groups, concerned traditionalists tended to be older (40% were 45 or over). They were generally well educated (about 30% had attended a postsecondary institution), married, and living in middle-income households. Although their households contained an average of three people, concerned traditionalists were the most likely of the market segments to live in a two-person household and to have no one under 16 years of age living at home. Concerned traditionalists were fairly evenly distributed among the cities studied, although they were relatively less likely to live in Montreal.

Benefits of MAP

Respondents were asked about their perceptions of the benefits or advantages of MAP foods versus the food products they currently purchased. They believed that MAP products would be significantly better than current types of packaged food in maintaining product quality and freshness in the refrigerator until the food was ready to be eaten and that MAP would reduce food waste.

Respondents also believed that MAP products would be moderately more advantageous than other products because of their quicker preparation time, desirable portion size, attractive packaging, product visibility and overall quality. MAP tended to be perceived as quite similar to current packaging methods insofar as food texture, refrigerator space requirements, nutritiousness and value were concerned. From Figure 3, it can be seen that few respondents rated MAP as worse than current packaging on any of these attributes. The highest negative response was 34% (a combination of "little worse" and "much worse") for the attribute "good value for money."

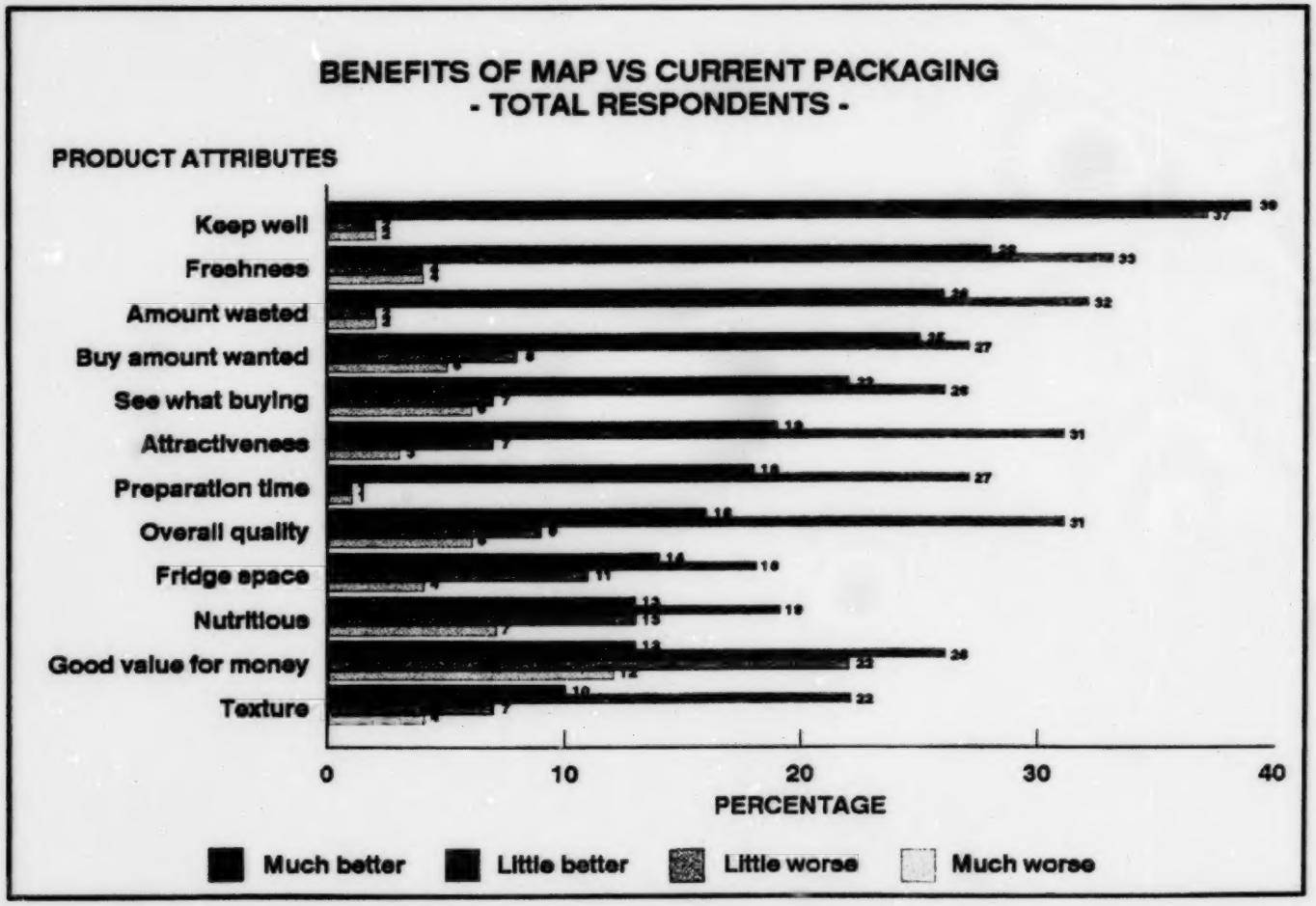
In an analysis by market segment, it is not surprising to find that the convinced budgeters were the most positive and the concerned traditionalists were the most negative about the benefits of MAP versus current packaging. As might also be expected, the leaners tended to rate MAP and current packaging about the same on most of the attributes (Table 6).

Table 6 Ratings of MAP versus current packaging (%)[1]

	Total	Convinced Budgeters	Leaners	Concerned Traditionalists
NO. OF RESPONDENTS	661	236	224	201
Keep well until ready to eat	79	90	80	62
Freshness	71	86	74	49
Amount of food wasted	71	84	69	54
Preparation time	66	76	63	58
Buying just the amount you want	65	80	65	48
Attractiveness	65	77	65	50
Seeing what you are purchasing	63	76	65	46
Overall quality	62	79	63	36
Texture	58	70	58	41
Need for fridge space	57	69	56	44
Nutritiousness	55	73	54	32
Good value for money	52	75	53	22

[1] Scale range is 100 (Much Better) to 0 (Much Worse)

Figure 3


BENEFITS OF MAP VS CURRENT PACKAGING
- TOTAL RESPONDENTS -
PRODUCT ATTRIBUTES
Keep well
Freshness
Amount wasted
Buy amount wanted
See what buying
Attractiveness
Preparation time
Overall quality
Fridge space
Nutritious
Good value for money
Texture
0
10
20
30
40
PERCENTAGE
Much better
Little better
Little worse
Much worse

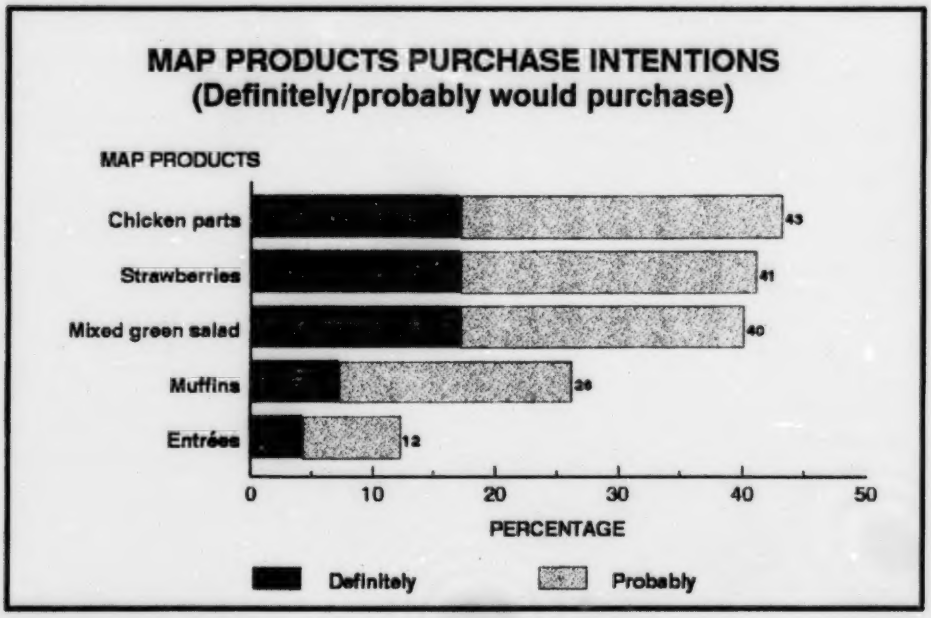
MAP purchase intentions

One of the key measures of the potential success of any new product is the respondents' intention to purchase. This measure reflects the level of appeal generated by a product description without the benefit of actual product experience.

Respondents were asked how likely they were to purchase a specific MAP product in five food categories: vegetables (mixed green salad), fruit (strawberries), baked goods (muffins), meat and poultry (chicken parts) and prepared food (entrées). The questions specified products rather than categories so that respondents clearly understood the decision they were being asked to make.

The MAP products that generated the highest levels of purchase intention (about 40% of respondents said they would definitely or probably buy them) were chicken parts, strawberries and mixed green salad. Purchase intention was very low for MAP muffins and entrées (Figure 4).

Figure 4



Most of the remaining respondents provided a negative rather than neutral response. Approximately 30% indicated that they would "definitely not" be likely to purchase MAP mixed green salad, strawberries or chicken parts. There was also low interest in the baked goods (37%) and entrées (58%).

The data for each of the five food product categories were also analyzed on the basis of city, age and household income of respondents (Figures 5-9).

Figure 5

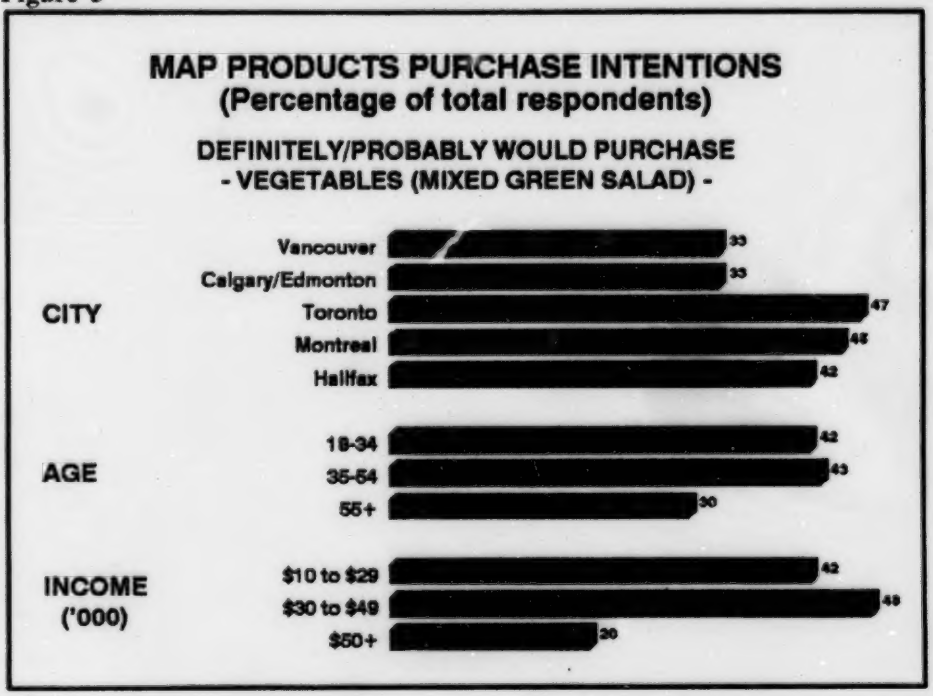


Figure 6

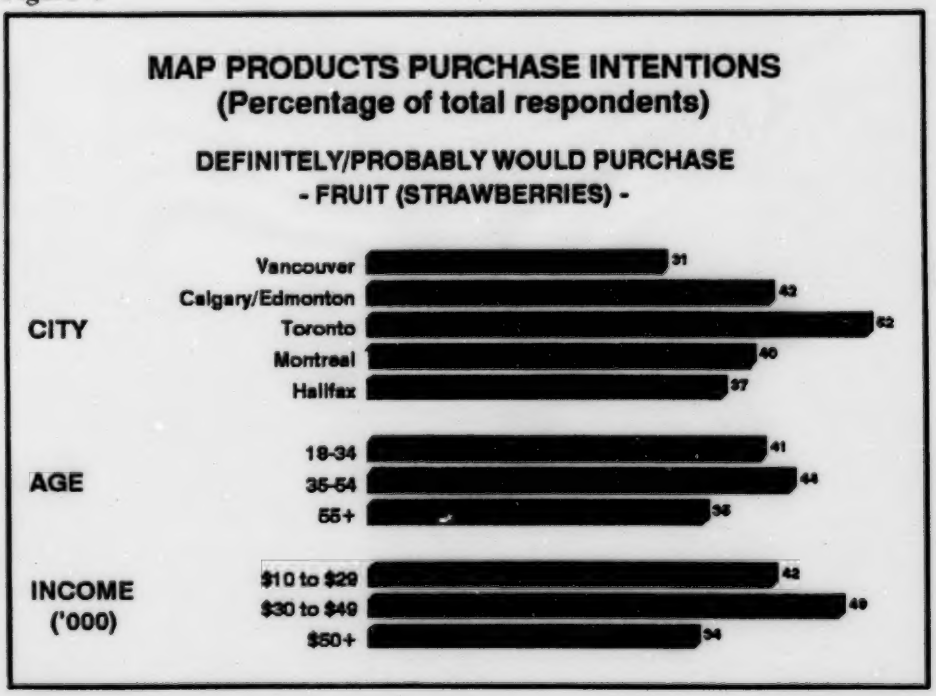


Figure 7

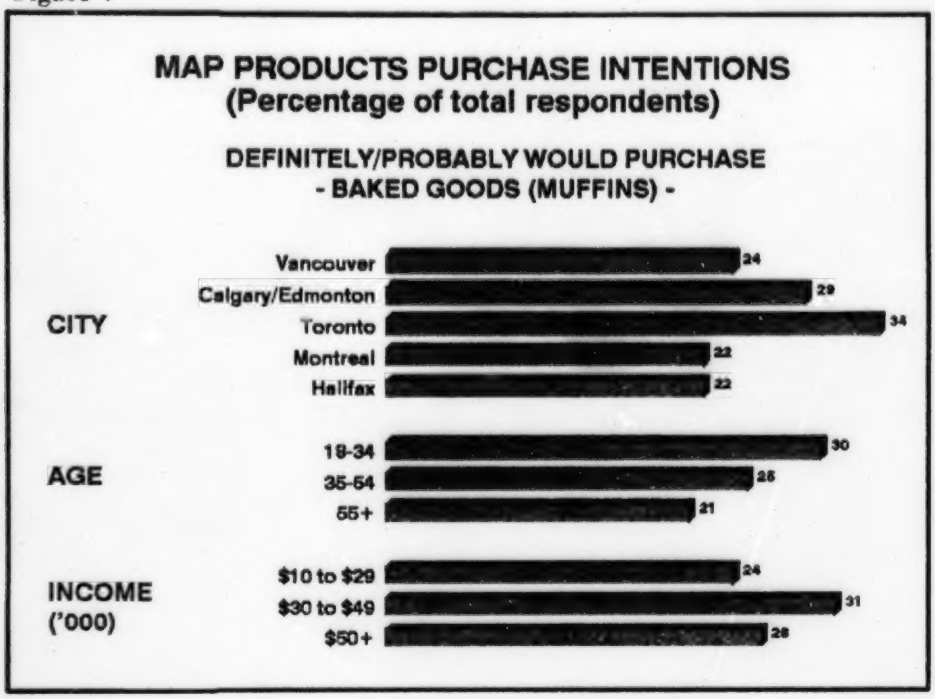


Figure 8

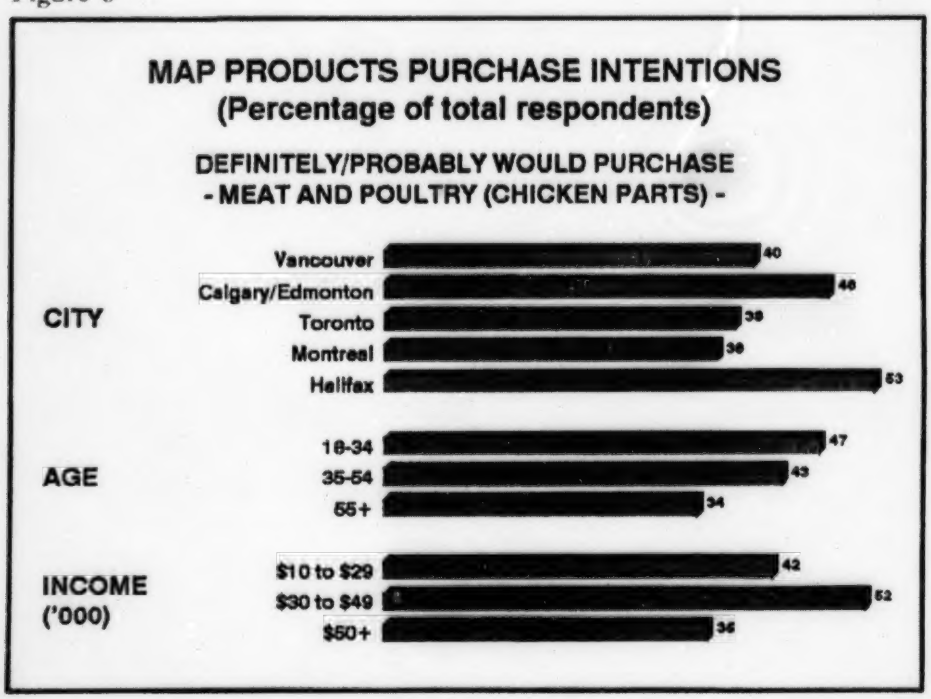
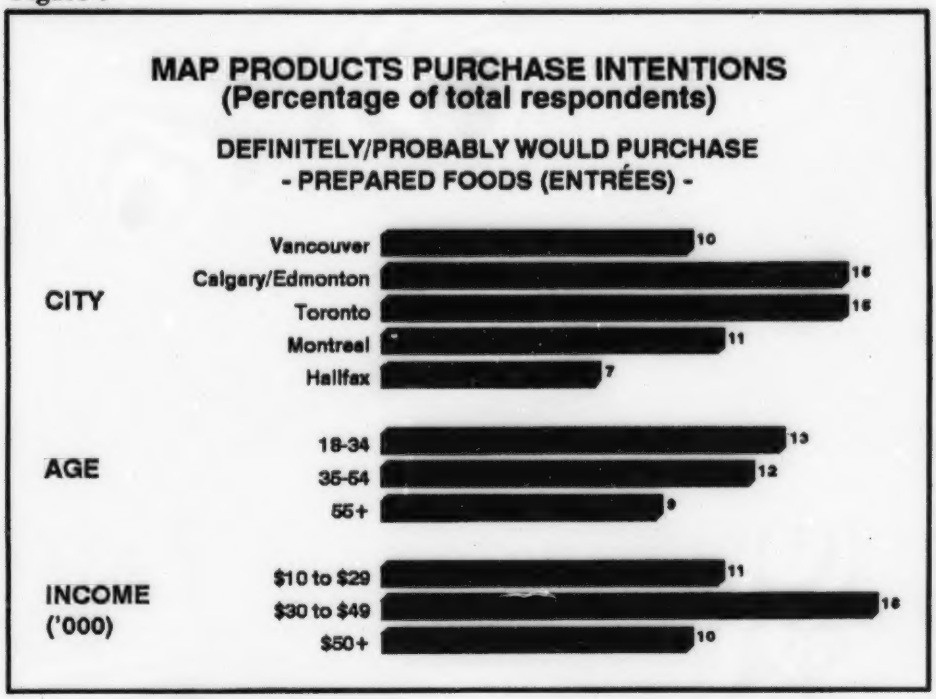


Figure 9



Vegetables (mixed green salad)

The highest levels of purchase interest were noted in Toronto (47%), Montreal (45%) and Halifax (42%). Lower levels were found in Vancouver and Calgary/Edmonton (33% each). Intention to purchase was more pronounced among younger respondents and among respondents with lower and middle incomes.

Fruit (strawberries)

Intention to purchase MAP strawberries was more pronounced among Toronto respondents (52%). Similar levels of purchase interest were found in Calgary/Edmonton, Montreal and Halifax (about 40%). Vancouver respondents showed the lowest interest (31%). Younger respondents were somewhat more interested than the older consumers, as were middle- and lower-income respondents versus higher-income consumers.

Baked goods (muffins)

While this product garnered only low levels of purchase interest across the board, respondents in Toronto were marginally more favorable (34%) than those in other cities, particularly Montreal and Halifax (22% each). Purchase interest decreased with age and was slightly higher among middle-income earners.

Meat and poultry (chicken parts)

Favorable respondents (those who would definitely or probably buy) were more likely to live in Halifax (53%), Calgary or Edmonton (48%), to be younger or middle-aged (18 to 54 years) and to live in a middle-income household.

Prepared foods (entrées)

As was the case for baked goods (muffins), interest in prepared entrées was very low. However, respondents in Calgary/Edmonton and Toronto were marginally more interested, as were those in middle-income households.

Consumers were also shown a card listing the same food items investigated with respect to their current shopping habits, and were asked whether they would buy these products regularly if available in MAP.

According to the results, the most popular MAP products were in the vegetable and meat and poultry categories. Fruit and baked goods ranked next. Very little interest was expressed in MAP gourmet or regular entrées or prepackaged sandwiches. (Figure 10).

The respondents who indicated they would make regular purchases of MAP products in each of the food categories estimated that 60% of their purchases would be MAP versus current packaging.

Market projections and opportunities

In market research, it is understood that what respondents say about their purchase intentions for a particular product is not always what they will do. Therefore, a new product trial intention model was applied to the data to estimate more accurately what proportion of respondents who say they will buy MAP products will actually do so. This model, called "Impact," was developed in the United States by Market Science Associates, using data obtained from hundreds of new product surveys. The model has revealed that only 78% of those who say they will "definitely buy" a new product actually go out and do so even once. Similarly, only 28% of those who say they will "probably buy" actually try the product, and only 8% of those who state they "may or may not buy" do buy the new product.

When this model was applied to the purchase intention data on chicken parts, strawberries and mixed green salad, each had a trial level of approximately 20%. This means that 20% of the consumers who are fully aware of MAP and are given the opportunity to purchase these MAP products would actually purchase them at least once. Muffins and entrées had an even lower purchase intention level (Table 7).

Figure 10

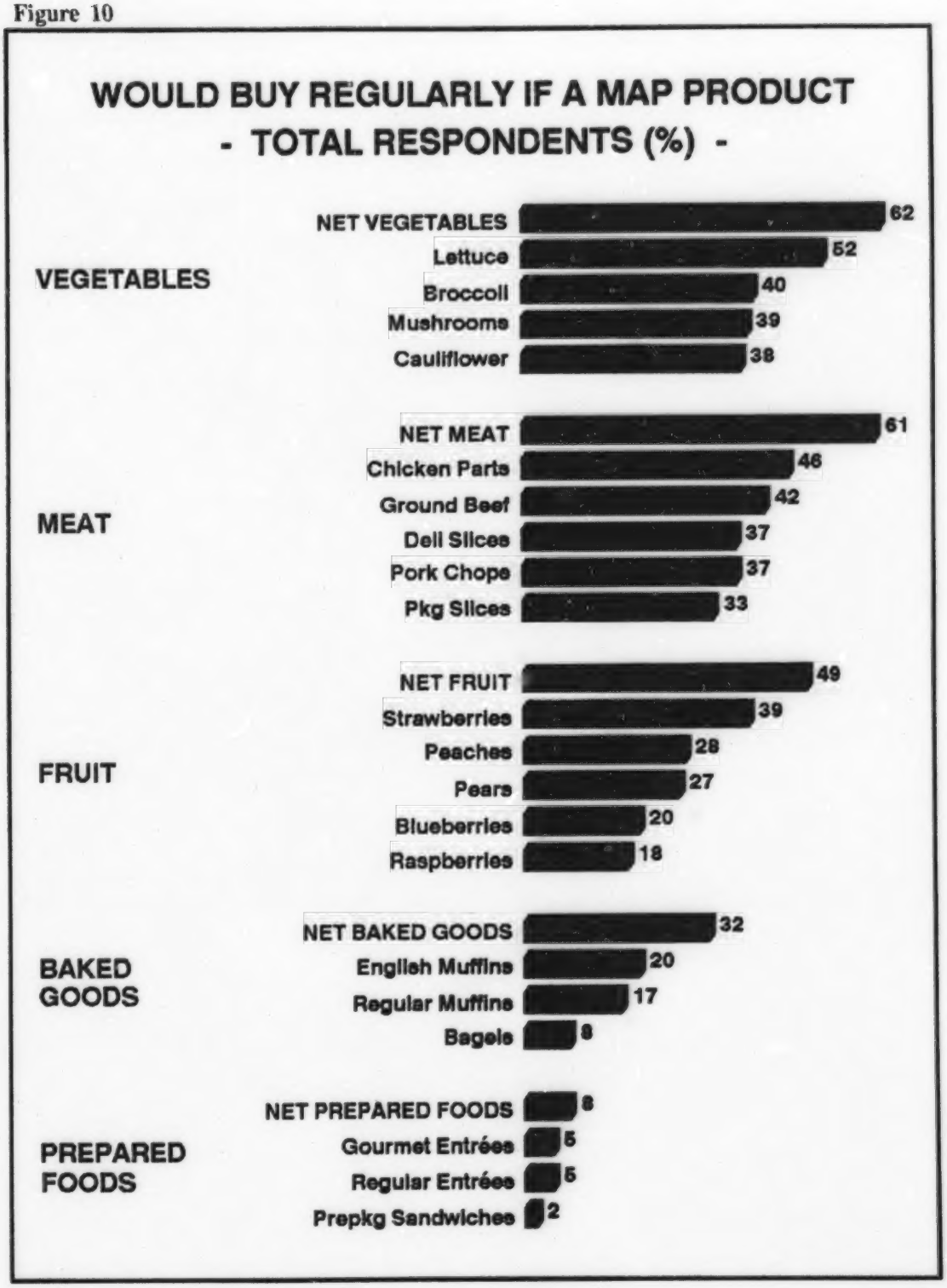

WOULD BUY REGULARLY IF A MAP PRODUCT
- TOTAL RESPONDENTS (%) -
VEGETABLES
NET VEGETABLES 62
Lettuce 52
Broccoli 40
Mushrooms 39
Cauliflower 38
MEAT
NET MEAT 61
Chicken Parts 46
Ground Beef 42
Deli Slices 37
Pork Chops 37
Pkg Slices 33
FRUIT
NET FRUIT 49
Strawberries 39
Peaches 28
Pears 27
Blueberries 20
Raspberries 18
BAKED GOODS
NET BAKED GOODS 32
English Muffins 20
Regular Muffins 17
Bagels 8
PREPARED FOODS
NET PREPARED FOODS 8
Gourmet Entrées 5
Regular Entrées 5
Prepkg Sandwiches 2

Table 7 Market projections for selected MAP products[1]

Chicken parts	21%
Strawberries	20%
Mixed green salad	20%
Muffins	11%
Entrées	5%

[1] Figures were obtained by applying a new product launch model called "Impact" to purchase intention data on total respondents (n = 661).

These levels do not appear unrealistic. However, they will be affected by the particular products offered to consumers at the time of purchase. There appeared to be little difference in intentions to purchase whether respondents received the written or the verbal description of MAP. This suggests that describing the MAP process in detail had little impact on potential consumers. Apparently, most of those interested in MAP products were not affected negatively by a full description of the packaging process.

In order to identify the food categories that represent the greatest potential or opportunities for MAP, data on the respondents' current food purchases and on their intentions to purchase MAP products were analyzed. Table 8 summarizes the results of this analysis.

Table 8 Opportunity targets for MAP

High priority	High-priority targets are products that are currently purchased frequently and that, if available in MAP, would most likely be purchased by consumers on a regular basis. *Examples: lettuce, ground beef, chicken parts, strawberries and peaches*
Medium priority	Medium-priority targets include products that consumers currently tend to purchase less frequently but would buy regularly in MAP. These products require marketing to entice consumers to buy them more often. *Examples: pork chops and deli-style meat slices*
Low priority	Low-priority targets include products that consumers buy relatively infrequently and are unlikely to buy regularly in MAP. *Examples: cauliflower, mushrooms, blueberries, raspberries, bagels and sandwiches*
Possible targets	Possible targets include products that are not particularly likely to be bought regularly in MAP but which consumers currently purchase fairly frequently. *Examples: broccoli and pears*

IMPLICATIONS

The findings of this study suggest that a significant segment of the Canadian population would pay premium prices for MAP products. Current trends such as the demand for more fresh produce, more single-serving products, more prepared meals and fewer preservatives also support premium pricing for MAP products.

Marketing opportunities for MAP vary depending on the category of product. New product development opportunities exist to market the freshness image, the extended shelf life and new types of prepared foods. Potential investors should consider the type of marketing strategy to adopt: whether to promote the attributes associated with MAP (e.g., longer shelf life and freshness) or to promote the technology itself. It has already been shown that MAP can be successful in the marketplace even if consumers are uninformed about the technology (e.g., fresh MAP pasta). However, informing the consumer may not be the correct strategy for all MAP products. Research indicates that either approach may be appropriate in the development of a marketing strategy.

In general, promoting only the benefits resulting from MAP technology appears to be an appropriate strategy for new products that have emerged because of MAP. The benefits of MAP fresh pasta, for instance, are far more compelling than the advantages of the technology itself. However, if MAP products are competing with similar, conventionally packaged products, the MAP process should be explained to help consumers understand the benefits of the technology.

APPENDICES

APPENDIX 1 - QUANTITATIVE QUESTIONNAIRE

___ ___ ___
Questionnaire #
February 13, 1989

MAP MARKET STUDY
SCREENER
#7-284-06

INTRODUCTION

Hello, I'm _____ from _____, a professional market research company. We are currently involved in a research study about food packaging on behalf of Agriculture Canada and provincial ministries of agriculture, and I would like to speak to the person who is most responsible for the grocery shopping in your household.

(IF RESPONDENT - CONTINUE, IF NOT RESPONDENT, ASK TO SPEAK TO RESPONDENT AND RE-INTRODUCE) The interview will take about 30 minutes and I'm sure you will find it very interesting. Would you be able to take the time now to do the interview?

Yes.....1...> ASK Q. A.
No.....2...> RECORD IN TALLY BOX BELOW

REFUSED 1 2 3 4 5 6 7 8 9 10

Q. A. Are you the person who is responsible for most of the grocery shopping in your household?

Yes.....1...> GO TO MAIN QUESTIONNAIRE
No.....2...> RECORD IN TALLY BOX BELOW

Q. B. Is that person at home now? May I speak to her/him?

INTERVIEWER: IF NECESSARY, RE-INTRODUCE YOURSELF. OTHERWISE RECORD IN APPROPRIATE TALLY BOX BELOW.

NOT AT HOME 1 2 3 4 5 6 7 8 9 10

REFUSED 1 2 3 4 5 6 7 8 9 10

RESPONDENT NAME AND ADDRESS: _____

_____

DATE OF INTERVIEW: _____

MAIN QUESTIONNAIRE

Q. 1a) First, I'm interested in knowing your shopping habits for different types of food products. Let's begin with vegetables. First, please tell me, using this card (HAND RESPONDENT CARD A AND CARD B), how often on average you purchase (READ EACH ITEM ONE AT A TIME) in and out of season. (RECORD ANSWERS IN APPROPRIATE COLUMN ON GRID.)

INTERVIEWER NOTE: IF ITEM PURCHASED AT LEAST "ONCE A MONTH" (CODES 1,2,3, OR 4 CIRCLED). ASK Q.1b, 1c, and 1d BEFORE GOING TO NEXT ITEM. WORK DOWN RATHER THAN ACROSS.

Q. 1b) (ASK IF PURCHASED ITEM AT LEAST "ONCE A MONTH" [CODES 1,2,3, OR 4].) Where do you usually purchase this item? (RECORD BELOW)

Q. 1c) About how long would you expect this item to last in your refrigerator before it was too old to be useful? (RECORD BELOW)

Q. 1d) On average, what proportion of the amount you purchased would you have to throw away because it has stayed too long in your refrigerator? (RECORD BELOW)

VEGETABLE GRID

	Lettuce		Mushrooms		Broccoli		Cauliflower	
	In Season	Out of Season	In Season	Out of Season	In Season	Out of Season	In Season	Out of Season
Q. 1a - FREQUENCY								
More often than once a week	1	1	1	1	1	1	1	1
About once a week	2	2	2	2	2	2	2	2
Once every 2 weeks	3	3	3	3	3	3	3	3
Once a month	4	4	4	4	4	4	4	4
Less often	5	5	5	5	5	5	5	5
Not at all	6	6	6	6	6	6	6	6
Q. 1b - WHERE BOUGHT								
Supermarket	1	1	1	1	1	1	1	1
Convenience Store	2	2	2	2	2	2	2	2
Small Corner Grocery Store	3	3	3	3	3	3	3	3
Bakery	4	4	4	4	4	4	4	4
Fruit & Vegetable Store	5	5	5	5	5	5	5	5
Roadside Stand/Farmers' Market	6	6	6	6	6	6	6	6
Butcher	7	7	7	7	7	7	7	7
Deli/Specialty Store	8	8	8	8	8	8	8	8
Other	9	9	9	9	9	9	9	9
Q. 1c - LAST								
Use right away		1		1		1		1
About 2 days		2		2		2		2
About 4 days		3		3		3		3
About 1 week		4		4		4		4
About 10 days		5		5		5		5
About 2 weeks		6		6		6		6
Longer		7		7		7		7
Q. 1d - AMOUNT THROWN AWAY								
None of it		1		1		1		1
Less than 25%		2		2		2		2
25% to 50%		3		3		3		3
50% or more		4		4		4		4

Q. 2a) Now, I would like to ask you about fresh fruit, not frozen or canned. Please tell me, using this card (HAND RESPONDENT CARD A), how often on average you purchase...(READ EACH ITEM ONE AT A TIME) in and out of season. (RECORD ANSWERS IN APPROPRIATE COLUMN ON GRID)

INTERVIEWER NOTE: IF ITEM PURCHASED AT LEAST "ONCE A MONTH" (CODES 1,2,3, OR 4 CIRCLED), ASK Q.2b, 2c, 2d BEFORE GOING TO NEXT ITEM. WORK DOWN RATHER THAN ACROSS.

Q. 2b) (ASK IF PURCHASE ITEM AT LEAST "ONCE A MONTH" [CODES 1,2,3, OR 4].) Where do you usually purchase this item? (RECORD BELOW)

Q. 2c) About how long would you expect this item to last in your refrigerator before it was too old to be useful? (RECORD BELOW)

Q. 2d) On average, what proportion of the amount you purchased would you have to throw away because it had stayed too long in your refrigerator? (RECORD BELOW)

FRUIT GRID

	Strawberries		Blueberries		Raspberries		Peaches		Pears	
	In Season	Out of Season	In Season	Out of Season	In Season	Out of Season	In Season	Out of Season	In Season	Out of Season
Q. 2a - FREQUENCY										
More often than once a week	1	1	1	1	1	1	1	1	1	1
About once a week	2	2	2	2	2	2	2	2	2	2
Once every 2 weeks	3	3	3	3	3	3	3	3	3	3
Once a month	4	4	4	4	4	4	4	4	4	4
Less often	5	5	5	5	5	5	5	5	5	5
Not at all	6	6	6	6	6	6	6	6	6	6
Q. 2b - WHERE BOUGHT										
Supermarket	1	1	1	1	1	1	1	1	1	1
Convenience Store	2	2	2	2	2	2	2	2	2	2
Small Corner Grocery Store	3	3	3	3	3	3	3	3	3	3
Bakery	4	4	4	4	4	4	4	4	4	4
Fruit & Vegetable Store	5	5	5	5	5	5	5	5	5	5
Roadside Stand/Farmers' Market	6	6	6	6	6	6	6	6	6	6
Butcher	7	7	7	7	7	7	7	7	7	7
Deli/Specialty Store	8	8	8	8	8	8	8	8	8	8
Other	9	9	9	9	9	9	9	9	9	9
Q. 2c - LAST										
Use right away	1		1		1		1		1	
About 2 days	2		2		2		2		2	
About 4 days	3		3		3		3		3	
About 1 week	4		4		4		4		4	
About 10 days	5		5		5		5		5	
About 2 weeks	6		6		6		6		6	
Longer	7		7		7		7		7	
Q. 2d - AMOUNT THROWN AWAY										
None of it	1		1		1		1		1	
Less than 25%	2		2		2		2		2	
25% to 50%	3		3		3		3		3	
50% or more	4		4		4		4		4	

Q. 3a) Now I'd like us to talk about bakery products for a moment. Please tell me, again using this card (HAND RESPONDENT CARD A) how often on average you purchase...(READ EACH ITEM ONE AT A TIME). (RECORD ANSWERS IN APPROPRIATE COLUMN ON GRID)

INTERVIEWER NOTE: IF ITEM PURCHASED AT LEAST "ONCE A MONTH" (CODES 1,2,3, OR 4 CIRCLED), ASK Q.3b, 3c, and 3d BEFORE GOING TO NEXT ITEM. WORK DOWN RATHER THAN ACROSS.

Q. 3b) (ASK IF PURCHASE ITEM AT LEAST "ONCE A MONTH" [CODES 1,2,3, OR 4].) Where do you usually purchase this item? (RECORD BELOW)

Q. 3c) About how long would you expect this item to last before it was too old to be useful? (RECORD BELOW)

Q. 3d) On average, what proportion of the amount you purchased would you have to throw away because it was too old? (RECORD BELOW)

BAKERY GRID

	English Muffins	Regular Muffins	Bagels
Q. 3a - FREQUENCY			
More often than once a week	1	1	1
About once a week	2	2	2
Once every 2 weeks	3	3	3
Once a month	4	4	4
Less often	5	5	5
Not at all	6	6	6
Q. 3b - WHERE BOUGHT			
Supermarket	1	1	1
Convenience Store	2	2	2
Small Corner Grocery Store	3	3	3
Bakery	4	4	4
Fruit & Vegetable Store	5	5	5
Roadside Stand/Farmers' Market	6	6	6
Butcher	7	7	7
Deli/Specialty Store	8	8	8
Other	9	9	9
Q. 3c - LAST			
Use right away	1	1	1
About 2 days	2	2	2
About 4 days	3	3	3
About 1 week	4	4	4
About 10 days	5	5	5
About 2 weeks	6	6	6
Longer	7	7	7
Q. 3d - AMOUNT THROWN AWAY			
None of it	1	1	1
Less than 25%	2	2	2
25% to 50%	3	3	3
50% or more	4	4	4

Q. 4a) Now, let's talk about fresh, not frozen, meats. Please tell me, using this card (HAND RESPONDENT CARD A) how often on average you purchase...(READ EACH ITEM ONE AT A TIME). (RECORD ANSWERS IN APPROPRIATE COLUMN ON GRID)

INTERVIEWER NOTE: IF ITEM PURCHASED AT LEAST "ONCE A MONTH" (CODES 1,2,3, OR 4 CIRCLED), ASK Q.4b, 4c, 4d BEFORE GOING TO NEXT ITEM. WORK DOWN RATHER THAN ACROSS.

Q. 4b) (ASK IF PURCHASE ITEM AT LEAST "ONCE A MONTH" [CODES 1,2,3, OR 4 CIRCLED].) Where do you usually purchase this item? (RECORD BELOW)

Q. 4c) About how long would you expect this item to last in your refrigerator before it was too old to be useful? (RECORD BELOW)

Q. 4d) On average, what proportion of the amount you purchased would you have to throw away because it had stayed too long in your refrigerator? (RECORD BELOW)

FRESH MEAT GRID

	Packaged Sliced Meats	Deli Style Sliced Meats	Chicken Parts	Ground Beef	Pork Chops
Q. 4a - FREQUENCY					
More often than once a week	1	1	1	1	1
About once a week	2	2	2	2	2
Once every 2 weeks	3	3	3	3	3
Once a month	4	4	4	4	4
Less often	5	5	5	5	5
Not at all	6	6	6	6	6
Q. 4b - WHERE BOUGHT					
Supermarket	1	1	1	1	1
Convenience Store	2	2	2	2	2
Small Corner Grocery Store	3	3	3	3	3
Bakery	4	4	4	4	4
Fruit & Vegetable Store	5	5	5	5	5
Roadside Stand/Farmers' Market	6	6	6	6	6
Butcher	7	7	7	7	7
Deli/Specialty Store	8	8	8	8	8
Other	9	9	9	9	9
Q. 4c - LAST					
Use right away	1	1	1	1	1
About 2 days	2	2	2	2	2
About 4 days	3	3	3	3	3
About 1 week	4	4	4	4	4
About 10 days	5	5	5	5	5
About 2 weeks	6	6	6	6	6
Longer	7	7	7	7	7
Q. 4d - AMOUNT THROWN AWAY					
None of it	1	1	1	1	1
Less than 25%	2	2	2	2	2
25% to 50%	3	3	3	3	3
50% or more	4	4	4	4	4

Q. 5a) Now I'd like to talk about prepared food for a moment. Using this card (HAND RESPONDENT CARD A), please tell me how often on average you purchase...(READ EACH ITEM ONE AT A TIME). (RECORD ANSWERS IN APPROPRIATE COLUMN ON GRID)

INTERVIEWER NOTE: IF ITEM PURCHASED AT LEAST "ONCE A MONTH" (CODES 1,2,3, OR 4 CIRCLED), ASK Q.5b BEFORE GOING TO NEXT ITEM. WORK DOWN RATHER THAN ACROSS.

Q. 5b) (ASK IF PURCHASE ITEM AT LEAST "ONCE A MONTH" [CODES 1,2,3, OR 4 CIRCLED].) Where do you usually purchase this item? (RECORD BELOW)

PREPARED FOOD GRID

	Specialty Gourmet Entrées	Regular Entrées	Prepackaged Sandwiches
Q. 5a - FREQUENCY			
More often than once a week	1	1	1
About once a week	2	2	2
Once every 2 weeks	3	3	3
Once a month	4	4	4
Less often	5	5	5
Not at all	6	6	6
Q. 5b - WHERE BOUGHT			
Supermarket	1	1	1
Convenience Store	2	2	2
Small Corner Grocery Store	3	3	3
Bakery	4	4	4
Fruit & Vegetable Store	5	5	5
Roadside Stand/Farmers' Market	6	6	6
Butcher	7	7	7
Deli/Specialty Store	8	8	8
Other	9	9	9

Q. 6 EACH RESPONDENT SHOULD SEE OR HEAR ONE ONLY OF THESE TEN ALTERNATIVES - THE ONE CIRCLED. SHORT CONCEPTS ARE READ TO RESPONDENTS AND LONG CONCEPTS ARE HANDED TO RESPONDENTS.

CONCEPT USED

SHORT CONCEPT:

(a)	Vegetables	(a)	1
(b)	Fruit	(b)	2
(c)	Baked Goods	(c)	3
(d)	Meat	(d)	4
(e)	Prepared Foods	(e)	5

LONG CONCEPT:

(f)	Vegetables	(f)	6	-- IF ONE OF THESE IS PRE-CIRCLED,
(g)	Fruit	(g)	7	HAND RELEVANT CONCEPT TO
(h)	Baked Goods	(h)	8	RESPONDENT AND GIVE THEM TIME
(i)	Meat	(i)	9	TO READ THOROUGHLY.
(j)	Prepared Foods	(j)	10	--

(a) SHORT CONCEPT: VEGETABLES

Now, I'd like to talk about a new type of packaging. It's a new kind of clear plastic package, with its own special atmosphere surrounding the product. For example, it can keep a mixed green salad green for up to two weeks in the refrigerator, if the pack is unopened. The packs will also allow you to buy small quantities of vegetables - like a quarter head of cauliflower - and keep it fresh for two weeks. The packaging would add about 20 cents in a one dollar purchase price.

(b) SHORT CONCEPT: FRUIT

Now, I'd like to talk to you about a new type of packaging. It's a new kind of clear plastic packages, with its own special atmosphere surrounding the product. For example, it can keep strawberries "field fresh" for up to two weeks in the refrigerator, if the pack is unopened. This packaging costs about 10 cents more than currently packed strawberries.

(c) SHORT CONCEPT: BAKED GOODS

Now, I'd like to talk to you about a new type of packaging. It's a new kind of clear plastic package, with its own special atmosphere surrounding the product. For example, it can keep muffins fresh for up to 3 weeks if unopened. The pack would add about 15 cents on the dollar over regular packaging.

(d) SHORT CONCEPT: MEAT

Now, I'd like to talk to you about a new type of packaging. It's a new kind of clear plastic package, with its own special atmosphere surrounding the product. For example, it can keep chicken pieces fresh for up to 10 days in the refrigerator, it can keep sliced meats fresh for up to 3 weeks in the refrigerator, if the pack is unopened. Unlike vacuum-packed meat slices, the meat slices are separate and keep their fresh look and fresh taste. This packing cost about 6-8 cents a pack more than current vacuum-packed sliced meat.

(e) SHORT CONCEPT: PREPARED FOODS

Now, I'd like to talk to you abut a new type of packaging. It's a new kind of clear plastic package, with its own special atmosphere surrounding the product. For example, it can keep prepared food fresh for up to 2 weeks in the refrigerator - they don't have to be kept frozen and then thawed - so that it keeps the fresh appearance and taste and has a faster preparation time than frozen prepared food. The cost of the new packaging would add about 20 cents to the cost of an entrée.

(f) LONG CONCEPT: VEGETABLES

There is a new kind of clear plastic package that has its own special atmosphere surrounding the product. This packaging is known as Modified Atmosphere Packaging (MAP). It extends the shelf life of foods by replacing the air inside a package with a specific mixture of gases, such as oxygen, carbon dioxide and nitrogen. These gases are normally present in the air we breathe. They are not food additives.

MAP can be used for a variety of foods. The process keeps products fresh longer while retaining the natural flavour, colour and texture throughout the shelf life.

For example, MAP could keep a mixed green salad fresh for up to 2 weeks in the refrigerator, if the pack is unopened.

The packs will allow you to buy small quantities of vegetables like a quarter head of cauliflower - and keep it fresh for 2 weeks. Packaging would add about 20 cents in a dollar purchase price.

MAP works by:

- reducing moisture loss;
- slowing down spoilage (caused by bacteria, molds); and
- slowing down ripening.

Each gas used has specific properties which can help extend the shelf life of a product. For example, carbon dioxide can be used to suppress many types of microorganisms, and oxygen can inhibit spoilage caused by others. The optimum blend of gases depend on the product being packaged.

MAP has been used in Europe since the 1960s. In 1981, Marks & Spencer in the United Kingdom began using MAP for its complete range of fresh meats. MAP products currently on the market in North America include fresh pasta, pasta sauce, sliced meats, sandwiches and prepared foods.

(g) LONG CONCEPT: FRUIT

There is a new kind of clear plastic package that has its own special atmosphere surrounding the product. This packaging is known as Modified Atmosphere Packaging (MAP). It extends the shelf life of foods by replacing the air inside a package with a specific mixture of gases, such as oxygen, carbon dioxide and nitrogen. These gases are normally present in the air we breathe. They are not food additives.

MAP can be used for a variety of foods. The process keeps products fresh longer while retaining the natural flavour, colour and texture throughout the shelf life.

For example, it can keep strawberries "field fresh" for up to 2 weeks in the refrigerator, if the pack is unopened. This packaging costs about 10 cents more than currently-packed strawberries.

MAP works by:

- reducing moisture loss;
- slowing down spoilage (caused by bacteria, molds); and
- slowing down ripening.

Each gas used has specific properties which can help extend the shelf life of a product. For example, carbon dioxide can be used to suppress many types of microorganisms, and oxygen can inhibit spoilage caused by others. The optimum blend of gases depend on the product being packaged.

MAP has been used in Europe since the 1960s. In 1981, Marks & Spencer in the United Kingdom began using MAP for its complete range of fresh meats. MAP products currently on the market in North America include fresh pasta, pasta sauce, sliced meats, sandwiches and prepared foods.

(h) LONG CONCEPT: BAKED GOODS

There is a new kind of clear plastic package that has its own special atmosphere surrounding the product. This packaging is known as Modified Atmosphere Packaging (MAP). It extends the shelf life of foods by replacing the air inside a package with a specific mixture of gases, such as oxygen, carbon dioxide and nitrogen. These gases are normally present in the air we breathe. They are not food additives.

MAP can be used for a variety of foods. The process keeps products fresh longer while retaining the natural flavour, colour and texture throughout the shelf life.

For example, it can keep muffins fresh for up to 3 weeks, if unopened. The pack would add about 15 cents on the dollar over regular packaging.

MAP works by:

- reducing moisture loss;
- slowing down spoilage (caused by bacteria, molds); and
- slowing down ripening.

Each gas used has specific properties which can help extend the shelf life of a product. For example, carbon dioxide can be used to suppress many types of microorganisms, and oxygen can inhibit spoilage caused by others. The optimum blend of gases depend on the product being packaged.

MAP has been used in Europe since the 1960s. In 1981, Marks & Spencer in the United Kingdom began using MAP for its complete range of fresh meats. MAP products currently on the market in North America include fresh pasta, pasta sauce, sliced meats, sandwiches and prepared foods.

(i) LONG CONCEPT: MEAT

There is a new kind of clear plastic package that has its own special atmosphere surrounding the product. This packaging is known as Modified Atmosphere Packaging (MAP). It extends the shelf life of foods by replacing the air inside a package with a specific mixture of gases, such as oxygen, carbon dioxide and nitrogen. These gases are normally present in the air we breathe. They are not food additives.

MAP can be used for a variety of foods. The process keeps products fresh longer while retaining the natural flavour, colour and texture throughout the shelf life.

For example, it can keep ground meat and chicken pieces fresh for up to 10 days in the refrigerator, it can also keep sliced meats fresh for up to three weeks in the refrigerator, if the pack is unopened. Unlike vacuum-packed meat slices, the meat slices are separate and keep their fresh look and fresh taste. This packing costs about 6-8 cents a pack more than current vacuum-packed sliced meat.

MAP works by:

- reducing moisture loss;
- slowing down spoilage (caused by bacteria, molds); and
- slowing down ripening.

Each gas used has specific properties which can help extend the shelf life of a product. For example, carbon dioxide can be used to suppress many types of microorganisms, and oxygen can inhibit spoilage caused by others. The optimum blend of gases depend on the product being packaged.

MAP has been used in Europe since the 1960s. In 1981, Marks & Spencer in the United Kingdom began using MAP for its complete range of fresh meats. MAP products currently on the market in North America include fresh pasta, pasta sauce, sliced meats, sandwiches and prepared foods.

(j) LONG CONCEPT: <u>PREPARED FOOD</u>

There is a new kind of clear plastic package that has its own special atmosphere surrounding the product. This packaging is known as Modified Atmosphere Packaging (MAP). It extends the shelf life of foods by replacing the air inside a package with a specific mixture of gases, such as oxygen, carbon dioxide and nitrogen. These gases are normally present in the air we breathe. They are not food additives.

MAP can be used for a variety of foods. The process keeps products fresh longer while retaining the natural flavour, colour and texture throughout the shelf life.

For example, it can keep prepared food fresh for up to 2 weeks in the refrigerator - it doesn't have to be kept frozen and then thawed - so that it keeps its fresh appearance and taste and has a faster preparation time than frozen prepared food. The cost of the new packaging would add about 20 cents to the cost of an entrée.

MAP works by:

- reducing moisture loss;
- slowing down spoilage (caused by bacteria, molds); and
- slowing down ripening.

Each gas used has specific properties which can help extend the shelf life of a product. For example, carbon dioxide can be used to suppress many types of microorganisms, and oxygen can inhibit spoilage caused by others. The optimum blend of gases depend on the product being packaged.

MAP has been used in Europe since the 1960s. In 1981, Marks & Spencer in the United Kingdom began using MAP for its complete range of fresh meats. MAP products currently on the market in North America include fresh pasta, pasta sauce, sliced meats, sandwiches and prepared foods.

<u>ASK ALL RESPONDENTS</u>

Overall, what are your first thoughts and feelings about this process? (PROBE FULLY)

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

Q. 7 ALL RESPONDENTS:

I am going to read you a list of statements that some people have made about this type of new packaging. I would like you to tell me if you agree or disagree with each statement. And would that be strongly or moderately? (HAND RESPONDENT CARD C)

The first statement is... (READ STATEMENT AT TICK START): Would you say you agree or disagree with that statement? Would that be strongly or moderately?

CARD C

TICK START	Statement	AGREE Strongly	AGREE Moderately	DISAGREE Moderately	DISAGREE Strongly	DK NS
___A)	This packaging process is a significant improvement over current packaging techniques	1	2	3	4	9
___B)	This packaging process will result in unacceptably higher food costs for me	1	2	3	4	9
___C)	The special atmosphere of gases used in the package might be harmful to me in the long term	1	2	3	4	9
___D)	This packaging process is not very different from what is used currently for many products	1	2	3	4	9
___E)	Overall I believe we need less rather than more packaging for our foods today	1	2	3	4	9
___F)	I like the idea that this packaging process allows me to keep fresh food unopened in my fridge up to 2 weeks before I am ready to use it	1	2	3	4	9
___G)	This type of packaging may be more harmful to the environment than current packaging on the market	1	2	3	4	9
___H)	I like the idea that this packaging process because I buy a lot of convenience foods	1	2	3	4	9
___I)	I don't like the idea of fresh food being treated in any way	1	2	3	4	9
___J)	I would like the convenience of having food - particularly vegetable - that have been washed, chopped or shredded for me	1	2	3	4	9

CARD C

TICK START	Statement	AGREE Strongly	AGREE Moderately	DISAGREE Moderately	DISAGREE Strongly	DK NS
___K)	This packaging process will save me money by reducing food waste	1	2	3	4	9
___L)	It appeals to me that this packaging process would mean less handling of fresh products by other shoppers	1	2	3	4	9
___M)	I wouldn't want to eat fresh food products knowing that they have been packaged to extend their shelf like	1	2	3	4	9
___N)	The government wouldn't allow such packaging if it could be harmful	1	2	3	4	9
___O)	I am not concerned that a special atmosphere is used to extend the shelf life of fresh products	1	2	3	4	9
___P)	This type of packaging will allow me to have more fresh food in my diet	1	2	3	4	9
___Q)	Any packaging process which extends the shelf life of fresh foods appeals to me	1	2	3	4	9
___R)	Overall, fresh food that is packaged is cleaner than unpackaged fresh food	1	2	3	4	9
___S)	This process is too new to be used widely by the public	1	2	3	4	9
___T)	There is really no difference between unpackaged fresh food and food sold in type of packaging	1	2	3	4	9
___U)	Every package using this process should have the gases used clearly identified	1	2	3	4	9
___V)	There should be more information made public about this process	1	2	3	4	9
___W)	If it is being used in Europe, it would probably be safe to use here	1	2	3	4	9
___X)	Generally, I don't have any problems with the quality and shelf life of the foods I currently purchase	1	2	3	4	9

Q. 8a) Before today, were you aware of any products which are currently being sold in this type of packaging?

Yes.....1 ----- IF YES: Which are they?
No.....2
DK/NS.....9

_____ ___ ___
_____ ___ ___
_____ ___ ___

Q. 8b) Actually, there are some products which are currently being sold in Canada using this packaging process. These products include: (SHOW CARD D). Do you ever purchase any of these products, knowing they are produced by this new process?

CARD D	Yes Purchased	No Don't Purchase	DK/NS
Fresh pasta	1	2	9
Pasta sauce	1	2	9
Sliced meats	1	2	9
Fresh entrées	1	2	9
Chicken fingers or nuggets	1	2	9
Prepackaged sandwiches	1	2	9

Q. 9 Now, based on what you have read/heard (AS APPROPRIATE) about this new packaging process, I'd like to get your opinion on the attributes of the products which could be packaged with this new process. I'm going to read a list of attributes, and for each one I would like you to tell me if you think the new process is better or not better for (MATCH CONCEPT...Vegetables, Fruit, Baked Goods, Meat, Prepared Foods) than the current way in which you buy these. (SHOW CARD E)

Would you think the new process, Modified Atmosphere Packaging, would be...

CARD E

Much better
A little better
About the same
A little worse
or Much worse

....than the current way in which you purchase (MATCH CONCEPT...VEGETABLES, FRUIT, BAKED GOODS, MEAT, PREPARED FOODS) on... (READ FIRST STATEMENT FROM TICK START).

CARD E

TICK START		Much Better	Little Better	About The Same	A Little Worse	Much Worse	DK/ NA
___A)	Buying just the amount you want	1	2	3	4	5	9
___B)	Need for fridge space	1	2	3	4	5	9
___C)	Being good value for the money	1	2	3	4	5	9
___D)	Overall quality	1	2	3	4	5	9
___E)	Attractiveness	1	2	3	4	5	9

TICK START | Much Better | Little Better | About The Same | A Little Worse | Much Worse | DK/ NA

___F) Nutritiousness.....1.....2.....3.....4.....5.....9

___G) Keeping well in the fridge until ready to be eaten.....1.....2.....3.....4.....5.....9

___H) Freshness.....1.....2.....3.....4.....5.....9

___I) Preparation time.....1.....2.....3.....4.....5.....9

___J) Amount of food wasted.....1.....2.....3.....4.....5.....9

___K) Seeing what you are purchasing.....1.....2.....3.....4.....5.....9

___L) Texture.....1.....2.....3.....4.....5.....9

Q. 10) Now, I'd like you to consider five products that will be available in this type of Modified Atmosphere Packaging in your local store and ask you how likely you would be to purchase each one. (SHOW CARD F)

The *first* is.....(START WITH CONCEPT SHOWN AT Q.6 AND ROTATE)

CARD F

	Defin.	Prob.	Might/ Might Not	Prob. Not	Defin. Not	DK/ NS
(...VEGETABLES) mixed green salad	1	2	3	4	5	9
(...FRUIT) strawberries	1	2	3	4	5	9
(...BAKED GOODS) muffins	1	2	3	4	5	9
(...MEAT) chicken parts	1	2	3	4	5	9
(...PREPARED FOODS) prepared foods like entrées	1	2	3	4	5	9

Q. 11a) Now, let's consider the original list of products I showed you. (SHOW CARD B). Please say for each one if you are likely to buy them regularly, or not, if they were packed in the new packaging.

Q. 11b) FOR EACH WILL BUY REGULARLY
What proportion or percentage of your purchases would you expect to be made in the new packaging as opposed to the way you buy these products now?

		(Q.11a) Will Buy Regularly	(Q.11b) Will Purchase
A.	Lettuce	1	____%
B.	Mushrooms	1	____%
C.	Broccoli	1	____%
D.	Cauliflower	1	____%
E.	Strawberries	1	____%
F.	Blueberries	1	____%
G.	Raspberries	1	____%
H.	Peaches	1	____%
I.	Pears	1	____%
J.	English Muffins	1	____%
K.	Regular Muffins	1	____%
L.	Bagels	1	____%
M.	Packaged sliced meats	1	____%
N.	Deli style sliced meats	1	____%
O.	Chicken parts	1	____%
P.	Ground beef	1	____%
Q.	Pork chops	1	____%
R.	Special gourmet entrées	1	____%
S.	Regular entrées	1	____%
T.	Prepackaged sandwiches	1	____%

Q. 11c) ALL RESPONDENTS

Are there any products, not shown here, which you think you would be likely to buy regularly in this packaging? (IF "YES", RECORD AND ASK: And what proportion or percentage of your purchases would you expect to be made of this product?)

_____ ____%
_____ ____%
_____ ____%

ALL RESPONDENTS

We would now like to ask you some questions that will be used for statistical purposes only. We want to assure that your answers will be kept confidential as they will be combined with other participants in the survey.

Q. 12 How many people are there in your house? _____

Q. 13 IF MORE THAN ONE: How many are under the age of 16 living at home?

None.....0

Q. 14 Which of the following categories does your age fall into?

18 - 24 years.....1
25 - 34 years.....2
35 - 44 years.....3
45 - 54 years.....4
55 - 64 years.....5
65 years or older.....6
(Refused/Not Stated).....9

Q. 15 What's the highest level of school you have obtained? Is it...

Not completed high school.....1
Completed high school.....2
Post-secondary/non-university college.....3
Started college/university.....4
Completed college/university.....5
OTHER:
_____

NS.....9

Q. 16 What is your marital status? Are you...(READ LIST)

Married or living together.....1
Single and never married.....2
Divorced/Separated.....3
Widowed.....4
NS.....9

Q. 17 And finally which of the following categories best describes your family income? That is, the total income before taxes of all persons in your household?

Under $10,000.....1
$10,000 - $19,999.....2
$20,000 - $29,999.....3
$30,000 - $39,999.....4
$40,000 - $49,999.....5
$50,000 - $59,999.....6
$60,000 and over.....7
(Refused/Not Stated).....9

RECORD SEX OF RESPONDENT: Male.....1
Female.....2

THANK YOU VERY MUCH FOR YOUR HELP

The information in this study may be accessible or protected as required under the provisions of the Access to Information Act. The collection registration number is DOA-ADB-271-03201.

FIELD CENTRE:

Vancouver.....01
Edmonton.....02
Toronto.....03
Montreal.....04
Halifax.....05

INTERVIEWER: _____

DATE OF INTERVIEW: _____

NAME: _____

ADDRESS: _____

_____

_____

PHONE #: _____

Vegetables

Lettuce was the most frequently purchased of the four vegetables, both in and out of season (about 50% of consumers bought it once a week). The majority (81%) of respondents bought their lettuce at a supermarket and expected it to last about 6.5 days before becoming unusable. Very little was wasted: About half the respondents reportedly threw away less than 25%, and over one-third threw none away.

Vancouver respondents purchased lettuce in season more frequently (24% mentioned more than once a week) than did the rest of the sample and were the least likely to shop for it at a supermarket (58%). However, virtually all respondents from Calgary and Edmonton bought their lettuce from a supermarket (98%). Halifax respondents tended to buy lettuce less frequently and expected it to last the longest (8.1 days on average). Montreal respondents reported the lowest amount of product waste (56% said none of it was thrown away), while those in Vancouver, Calgary and Edmonton reported the highest (only 25% threw away none).

Compared to lettuce, **mushrooms** in season were purchased relatively infrequently - only 25% of respondents bought them once a week, and 23% did not buy them at all. Mushrooms were bought out of season marginally less frequently than in season. The majority (85%) of respondents reported buying mushrooms at a supermarket, while about 10% shopped at a fruit and vegetable store. On average, mushrooms were expected to last 5 days and, possibly because of their cost, very few were wasted (66% of respondents reported none were thrown away).

The highest frequency of purchase was noted in Montreal (39% bought mushrooms once a week) and the lowest in Calgary and Edmonton (14% bought once a week). While the supermarket was the most common purchase point in all cities, Vancouver and Toronto respondents also favored fruit and vegetable stores. Product life expectancy was lowest in Halifax (27% used their mushrooms right away) and highest in Vancouver and Montreal.

Broccoli in season appeared to be slightly more popular than mushrooms — about half the sample purchased it between once a week and once every two weeks. Broccoli was purchased marginally less out of season than in season. Again, the main purchase point was the supermarket, followed by the fruit and vegetable store and roadside stands and farmers' markets. On average, broccoli was expected to last 6 days, and about 60% of respondents reported no waste.

The frequency of in-season broccoli purchases was highest in Vancouver and Toronto and lowest in Halifax. As observed for the other vegetables, the supermarket was the most common purchase point, but respondents in Vancouver and Toronto

also favored fruit and vegetable stores. Halifax respondents expected this vegetable to keep longer and were the most likely to use all the broccoli they bought (75% threw none away).

Cauliflower in season tended to be purchased only slightly less often than broccoli, and about as frequently as mushrooms. Over 60% of the sample bought it between once a week and once a month, and about 20% not at all. Cauliflower out of season was purchased less frequently than any of the other vegetables in the survey. The usual purchase point, consistent with that reported for the other vegetables, was the supermarket, followed by the fruit and vegetable store and the roadside stand and farmer's market. Cauliflower was expected to keep in the refrigerator for about 4 to 7 days by almost 60% of respondents, most of whom (65%) let none go to waste.

As noted for broccoli, the frequency of cauliflower purchases was highest in Vancouver and lowest in Halifax (where 30% did not buy it at all). Except in Vancouver, where 40% bought from fruit and vegetable stores, roadside stands and farmers' markets, the majority of respondents purchased from a supermarket. Halifax respondents expected the longest shelf life of this vegetable. Respondents in Vancouver were the most likely to throw away some of the cauliflower they had bought.

Fruits

Of the five fruits examined in this study, **strawberries** in season were the most frequently purchased. Almost half of the total sample bought strawberries at least once a week in season. However, strawberries were rarely purchased out of season. Over half (55%) of respondents usually bought strawberries from a supermarket, although roadside stands and farmers' markets were popular among 28%, and fruit and vegetable stores among a further 11%. Approximately one-third of consumers ate the strawberries right away, and almost 60% did not expect them to last longer than a week in the refrigerator. Waste was minimal - 74% reported no strawberries were thrown away.

The highest frequency of purchase was observed in Toronto and the lowest in Calgary and Edmonton, where 40% of respondents bought strawberries in season less often than once a month or not at all. The usual purchase point for strawberries in season varied by city - almost all Calgary and Edmonton respondents (95%) bought from a supermarket, whereas in Vancouver 53% shopped at roadside stands and farmers' markets. Compared with consumers in the other cities, Halifax consumers expected strawberries to last the longest in the refrigerator.

Overall, **blueberries** tended to be purchased infrequently both in and out of season. Almost half the sample did not buy them at all in season. Those who did bought them on average once a month or less often, mainly from a grocery store

(51%) or a roadside stand (34%). About one-third used them right away, although they expected them to keep in the refrigerator for an average of 4.5 days. Little waste occurred - almost 80% reported that none of their blueberry purchases were discarded.

Like blueberries, **raspberries** were purchased infrequently both in and out of season. Over half the sample never bought raspberries in season, but those who did tended to purchase them from supermarkets (52%) and roadside stands or farmers' markets (32%). Approximately 40% of respondents used the raspberries right away, but the average life expectancy for the fruit in the refrigerator was 3.5 days. Almost 80% of consumers ate all the raspberries they purchased.

Peaches in season were the second most popular of the fruits in the survey. They were purchased at least once a week by 42% of the total sample. About two-thirds of the respondents usually bought their peaches from a supermarket, 21% from a roadside stand, and another 11% from a fruit and vegetable store. Unlike strawberries, peaches were not necessarily eaten right away, probably because they were purchased in larger quantities, e.g., by the basket. About 40% of consumers expected peaches to keep for 1 week. As with strawberries, waste tended to be minimal - 74% of respondents threw no peaches away.

Purchase frequency was highest in Toronto and Montreal. As with strawberries, the usual purchase point varied by city: In Calgary and Edmonton, the majority (87%) of respondents bought from supermarkets, while over half of Vancouver respondents shopped at fruit and vegetable stores or farmers' markets and roadside stands. Halifax consumers (93%) were the least likely to throw out any peaches, while Toronto consumers reported the highest level of waste.

Pears tended to be purchased approximately as frequently as peaches. They were purchased at least once a week in season by 35% of the total sample. Also as with peaches, most consumers (65%) bought their pears from a supermarket, 20% shopped at roadside stands, and another 11% at fruit and vegetable stores. Pears were not necessarily used right away (about 40% of respondents expected them to last 1 week) and little waste occurred (78% reported that no pears were thrown away).

Like peaches, pears were most popular in Toronto and Montreal. The supermarket dominated as the usual purchase point in Calgary and Edmonton (90%), while in Vancouver the supermarket (41%) and the roadside stand (40%) were equally popular purchase locations.

Baked goods

English muffins were not a particularly popular bakery product (50% of the sample never purchased them). The highest frequency of English muffin purchases was observed in Halifax and Toronto. Those who purchased them tended to do so once a

month or less often (31%), usually from a supermarket (90%). Only 7% mentioned a bakery as their usual purchase point. About one-third of consumers expected English muffins to keep for 1 week, and most (82%) used all the English muffins they bought.

Regular muffins were less popular than English muffins (61% of the total sample did not buy them at all). They were purchased most frequently in Toronto. In general, they were purchased once a month or less often (23%), mainly from a supermarket (65%), and to a much lesser extent from a bakery (21%). While 20% ate the muffins right away, most consumers (62%) expected them to keep from 2 to 7 days, and most (80%) threw none away.

Of the three bakery products examined in this study, **bagels** were the least popular. Nearly 75% of respondents did not buy them at all. Toronto respondents bought them most frequently. Once again, the supermarket was the main purchase location (65%), and 27% bought from a bakery. Most people (65%) expected a product life of 2 to 7 days, and 76% consumed all the bagels they bought.

Meat and poultry

Ground beef was the most popular of the five meat items in the survey. Only 5% of the sample never bought it, whereas almost half (46%) bought it once a week, and 25% once every 2 weeks. The majority (91%) shopped for ground beef at a supermarket, and only 6% went to a butcher shop. Ground beef was expected to remain fresh in the refrigerator for 2 to 7 days (60%), and almost 20% used it right away. Nearly 90% threw none out.

Frequency of purchase was highest in Montreal, Calgary and Edmonton. Montrealers were only marginally more likely to purchase from a butcher shop. Product life expectancy varied substantially depending on the city. In Vancouver, respondents had the lowest expectations (half cited about 2 days), and 30% used their ground beef right away. Calgary and Edmonton respondents expected this product to keep for as long as 8 days on average.

The purchase rate for **chicken parts** was only slightly lower than that for ground beef. Overall, only 10% of respondents never bought them, whereas 35% purchased them once a week, and another 29% once every 2 weeks. The majority (93%) bought chicken parts from a supermarket, and many (63%) expected the product to keep fresh for 2 to 7 days. Almost 90% threw none away.

The highest frequency of purchase was noted in Toronto (58% of respondents bought at least once a week), and the lowest in Calgary and Edmonton (only 23% bought at least once a week and 20% not at all). Vancouver residents were the most likely to use their chicken parts right away (31%), and 44% expected them to keep for only 2 days. As with ground beef, respondents from Calgary and Edmonton expected chicken parts to last the longest.

Pork chops were purchased once a week to once every 2 weeks by almost half the sample. Only 6% visited a butcher shop, and 91% bought from a supermarket. The average product life expectancy in a refrigerator was almost 6 days, and there was very little waste. Toronto and Halifax consumers were the most frequent purchasers of pork chops (54% in Toronto and 59% in Halifax bought once a week to once every two weeks). As with the other meat and poultry products in the survey, Vancouver respondents had the lowest expectations for shelf life, and Calgary and Edmonton respondents had the highest.

Deli-style sliced meats tended to be bought between once a week and once every 2 weeks (47%), although 27% of respondents did not buy them at all. The main purchase location was the supermarket (71%), and 21% preferred to shop at a deli or specialty store. About two-thirds of respondents expected deli-style sliced meats to keep for 4 to 7 days and reported no waste.

Packaged sliced meats were the least popular of the five meat items in the survey. Only 25% of respondents bought packaged sliced meats once a week, and about 40% did not buy them at all. The supermarket was the purchase location used by 93%, and the average life expectancy for the product was a week. Two-thirds of the consumers reported no waste, and 28% indicated that less than one-quarter of the slices were wasted.

Prepared foods

None of the three items studied - gourmet entrées, regular entrées and prepackaged sandwiches - were very popular among respondents. In fact, the vast majority of respondents did not buy these products at all. **Gourmet entrées** were bought once a month or less often by 10% and not at all by 86%. The supermarket was the only purchase location for this product. Similarly, **regular entrées** were purchased only once a month or less often by 11% of respondents, again from a supermarket, and not at all by 86%. **Prepackaged sandwiches** were purchased by only 2% of the total sample, and less often than once a month. The purchase points other than supermarkets included delis and specialty stores, convenience stores and small corner grocery stores.